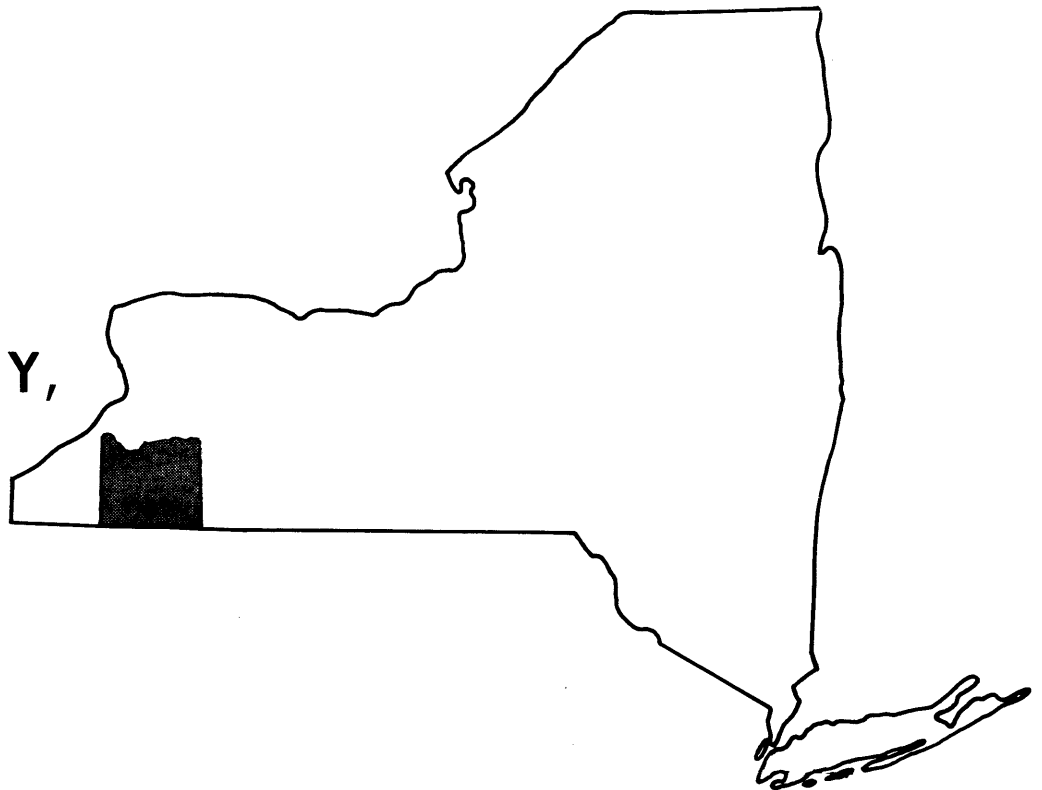# FLOOD INSURANCE STUDY

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

TOWN OF GREAT VALLEY, NEW YORK
CATTARAUGUS COUNTY

JANUARY 1978

U.S. DEPARTMENT of HOUSING & URBAN DEVELOPMENT
FEDERAL INSURANCE ADMINISTRATION

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1.0 INTRODUCTION

1.1 Purpose of Study

The purpose of this Flood Insurance Study is to investigate the existence and severity of flood hazards in the Town of Great Valley, Cattaraugus County, New York, and to aid in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Initial use of this information will be to convert Great Valley to the regular program of flood insurance by the Federal Insurance Administration (FIA). Further use of the information will be made by local and regional planners in their efforts to promote sound land use and flood plain development.

1.2 Coordination

The purpose of the Flood Insurance Study was explained at a Consultation and Coordination meeting on July 30, 1975, with representatives of the U. S. Army Corps of Engineers (COE), the FIA, the Southern Tier West Regional Planning Board, the New York State Department of Environmental Conservation and the officials of the Town of Great Valley.

A search for basic data was made at all levels of government. The COE and the U. S. Department of Agriculture, Soil Conservation Service (SCS) provided information as well as copies of previously surveyed cross sections of Great Valley Creek. The U. S. Geological Survey (USGS) was contacted to obtain contour maps showing drainage area boundaries.

On November 17, 1976, a meeting was held with officials of the town to obtain additional local input and to present preliminary study results for community review. The final meeting of consultation and coordination was held on February 8, 1977, where the final draft of the Flood Insurance Study was presented for further local comment.

Officials of the town and interested local property owners attended the meeting with representatives of the FIA and the New York State

Department of Environmental Conservation. Comments received at that meeting concerning specific areas of inundation of the 1967 flood have been incorporated into this Flood Insurance Study.

1.3 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968, as amended.

The hydrologic and hydraulic analyses for this study were performed by the New York State Department of Environmental Conservation for the Federal Insurance Administration, under Contract No. H-3856. This work, which was completed in January 1977, covered all significant flooding sources in Great Valley.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the area of the Town of Great Valley except for the area of the Allegany Indian Reservation. The area of study is shown on the Vicinity Map (Figure 1).

Because of the development within the flood plain areas it was agreed between the FIA and the Town of Great Valley that Great Valley Creek and the portion of Wrights Creek up to Humphrey Road were to be studied in detail. The remaining stretch of Wrights Creek and the entire length of Forks Creek within the town were studied by approximate methods. Portions of Plum Brook, Porter Creek, Barker Run and Willoughby Creek as well as several unnamed streams were also studied by approximate methods.

The areas studied in detail were chosen with consideration given to all forecasted development and proposed construction for the next five years (through March 1980). Approximate methods of analysis were used to study those areas having low development potential and/ or minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by FIA.

2.2 Community Description

The Town of Great Valley, located in central Cattaraugus County in southwestern New York State, is separated into two parts by the Allegany Indian Reservation which follows the course of the
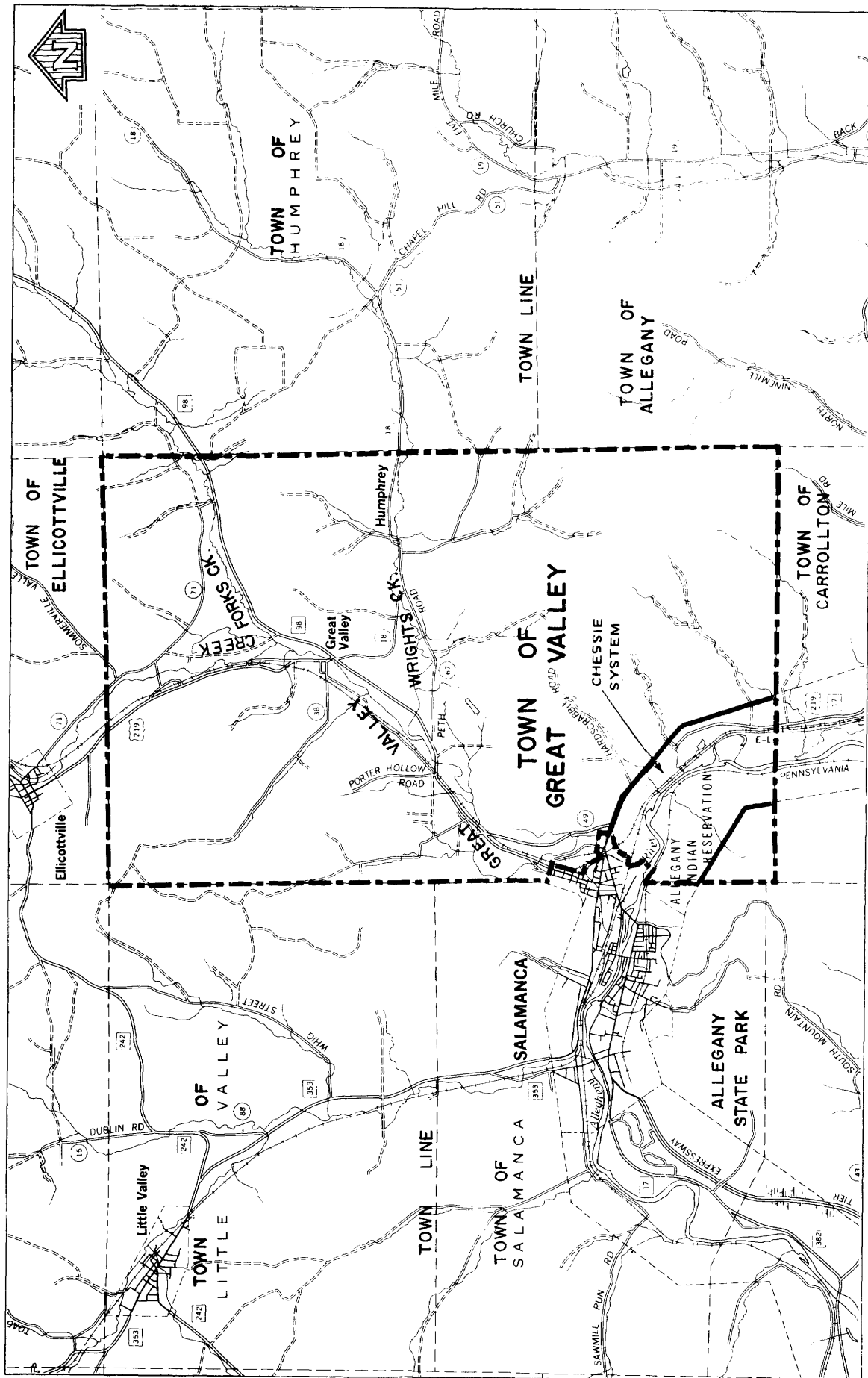
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VICINITY MAP

TOWN OF GREAT VALLEY, NY
(CATTARAUGUS CO.)

FIGURE 1

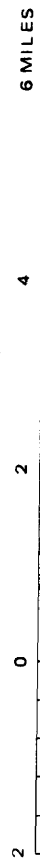Allegheny River. The town contains 50.8 square miles exclusive of the Indian Reservation and the City of Salamanca, both located in the southwest corner.

The population of the town remained steady from 1920 to 1960 (Reference 1). During the sixties, however, suburban development in the town caused a 24 percent increase to a total of 1745 inhabitants in 1970. Significant further growth will be dependent upon the opening of new employment opportunities in the Salamanca area.

Great Valley Creek flows generally southward through the town. Wrights Creek and Forks Creek, the two principal tributaries to Great Valley Creek, both have their confluences within the Town of Great Valley. The drainage area of Great Valley Creek at the northern corporate limit is approximately 140 square miles.

Great Valley is generally wide and flanked on both sides by steep hills rising to an almost uniform series of hilltops about 2,200 feet above the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929.

Development is mostly confined to the valley areas with much of the flatlands occupied by highways and railroads. There is extensive agriculture within much of the flood plain areas and the surrounding hills are heavily forested. Continuing development, is likely to take place in or on the edges of flood prone areas due to its ease of development.

Climate is typical of temperate continental regions with an average annual temperature of about 45°F. Average annual precipitation is about 44 inches throughout the town of which approximately one-half is runoff.

2.3 Principal Flood Problems

Due to the steep terrain of their watersheds, Wrights Creek and Forks Creek are subject to flash flooding from localized high-intensity, short-duration storms. Great Valley Creek, due to its larger watershed, has experienced its greatest flooding concurrent with widespread flooding in the northern Allegheny River Basin.

From records of the recording gage on Great Valley Creek, newspaper accounts, and interviews with residents of the area it appears that the greatest flood of record on Great Valley Creek occurred on September 28, 1967. Although the recording gage was inundated and out of operation the maximum flow has been estimated at 28,600

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cubic feet per second (cfs) with a flood stage of 1,411.3 feet NGVD (Reference 2). The gage was discontinued in the following year and its location cannot now be precisely determined due to changes in the stream channel since that time. The published location of 2.5 miles above the Allegheny River (Reference 2) indicates it was approximately 1,800 feet upstream of Highland Avenue. At this location the estimated stage is slightly in excess of the computed water-surface elevation of a 500-year flood. Such precise comparison is not warranted, however, but does indicate that the September 1967 flood was probably well in excess of a 100-year occurrence and may have approached the magnitude of the 500-year event.

Local officials indicate that travel within the town and surrounding areas was severely hampered as a result of the 1967 flood. This flood destroyed many small bridges and caused major damage to low-lying roadway sections. Several residences were damaged beyond repair but no lives were lost. No compilation of damages was prepared but it is apparent that the 1967 flood had a significant economic impact on this area.

Two other major floods occurred during the period of gage records; on March 7, 1956, and on January 22, 1959. Both of these events, which exceeded the 10-year flood, were the result of extensive rainfall coupled with warm temperatures which caused rapid snowmelt. Similar conditions account for the majority of flooding incidences on tributary streams in the Allegheny River Basin.

While there are numerous bridges in the lower reach of Great Valley Creek there are no data available to indicate that ice jams or debris pile-ups at these structures significantly increases flooding.

Figures 2 and 3 show portions of Great Valley Creek and the Allegheny River near the southern town boundary during the flood of June 1972 which caused widespread flooding throughout the Allegheny Basin.

2.4 Flood Protection Measures

There are no existing flood control projects within the Town of Great Valley and no projects which would materially alter the study results are presently planned or anticipated for the town.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood
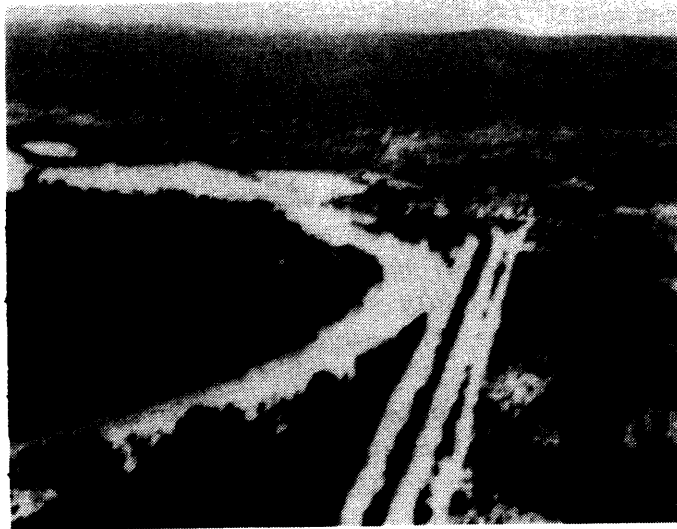
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Figure 2-View of Allegheny River during June 1972
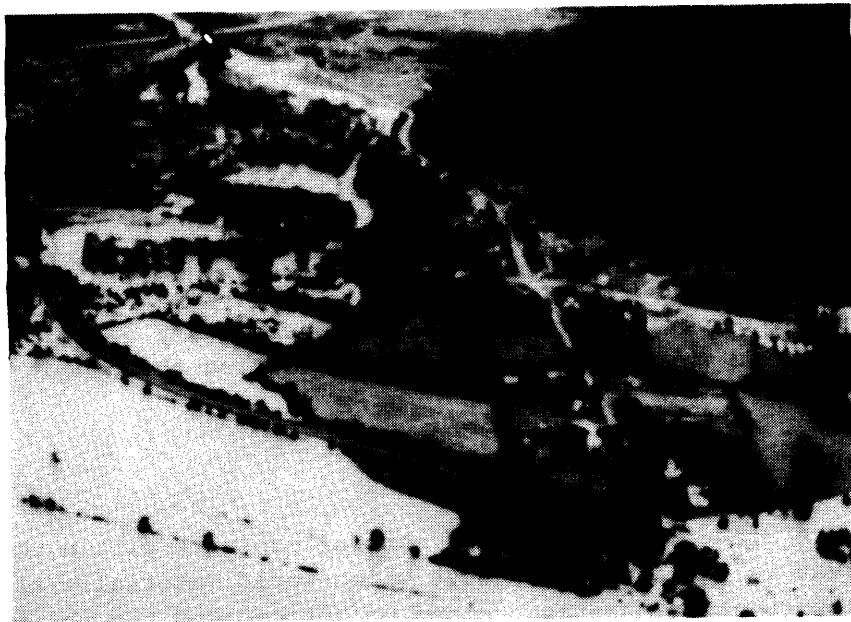flood. Great Valley Creek is in back-
ground flowing from right.

Figure 3-View taken at same time as Figure 2 up
the mouth of Great Valley. Penn Central
Railroad in foreground with State Route
17 crossing through center of photo.
State Route 219 crosses Great Valley
Creek in far background.

hazard data required for this study. Floods having recurrence intervals of 10, 50, 100, and 500 years have been selected as having special significance for flood plain management and for flood insurance premium rates. The analyses reported here reflect current conditions in the drainage areas of the streams.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each stream studied in detail in the community.

A regional analysis using USGS stream gaging records (Reference 3) for maximum peak flow data was prepared by the New York State Department of Environmental Conservation (Reference 4) to establish Exceedence-Interval Discharge relationships at selected points along the waterways of the Allegheny River Basin for uncontrolled drainage areas larger than five square miles. For smaller areas a Bureau of Public Roads technique (Reference 5) was used to establish the hydrology. The statistical procedures used in this analysis are those proposed by Leo R. Beard (Reference 6) which utilized a log-Pearson Type III distribution as a base method for flood flow frequency studies. This methodology conforms with the uniform techniques for determining flood flow frequencies as set forth by the Hydrology Committee of the United States Water Resources Council (Reference 7).

Streamflow data were available for Great Valley Creek from a recording gaging station located 2.5 miles above its confluence with the Allegheny River. However, the number of years for which such data are available for the stream (period of record 1951-67) is too small to be used alone in determining a flood flow-frequency relationship. Gage data were used to calibrate synthetically produced stream-flows with historical flooding.

A synthetic rainfall-runoff relationship method, based on a dimensionless unit hydrograph, was used to develop flood flow-frequency relationships. The 24-hour rainfall amounts for frequencies up to 100 years, as obtained from the Rainfall Frequency Atlas of the United States (Reference 8), were plotted and the rainfall amount for the 500-year frequency was extrapolated from the resulting graph.

The watershed of each stream was divided into subareas to evaluate the hydrologic effects of as many tributaries as would be significant.

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The computer program TR-20 (Reference 9), developed by the SCS, was used to compute surface runoff. It takes into account conditions affecting runoff such as land use, type of soil, shape and slope of watershed, antecedent moisture condition, etc. It develops a hydrograph and routes the hydrograph through stream channels and reservoirs. The program is designed to combine the routed hydrograph with those from other tributaries and print out the total composite hydrograph peak discharges, and times of occurrence at each desired point in the watershed for each storm evaluated. From this data, frequency-discharge, drainage area curves were developed for each evaluation point.

A summary of discharges and drainage areas derived from these analyses is shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-YEAR	50-YEAR	100-YEAR	500-YEAR
GREAT VALLEY CREEK					
Downstream Corporate Limits	139.3	7,800	11,422	12,815	16,715
Upstream Corporate Limits	48.7	2,625	3,900	4,300	5,650
WRIGHTS CREEK					
Confluence with Great Valley Creek	34.9	2,750	4,200	4,700	6,200

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the streams studied in detail in the community were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these streams.

Cross sections were located at close intervals above and below bridges, at control sections along the stream length, and at significant changes in ground relief, land use, or land cover. Cross sections and stream base line measurements were obtained by field survey. Reach lengths for the channel were measured along the centerline of channel between sections and overbank reach lengths were measured along the approximate centerline of the effective out-of-channel flow area.

For Great Valley Creek and Wrights Creek, roughness coefficients (Manning's "n") were determined by field inspection and based on the National Engineering Handbook (Reference 10). In arriving at a realistic value, due weight was given to the natural materials of which the channel was composed, surface irregularity, variations in shape and size of cross sections, characteristics of obstructions such as debris deposits, stumps, exposed roots, boulders, fallen and lodged logs, etc., type of vegetation, and degree of meandering. A summary of the range of channel and overbank "n" values is presented below.

SUMMARY OF ROUGHNESS COEFFICIENTS

	Range of Manning's "n"	
Watercourse	Channel	Overbanks
Great Valley Creek	0.05-0.08	0.06-0.10
Wrights Creek	0.04-0.055	0.065-0.08

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals.

Flood profiles on Great Valley Creek and Wrights Creek were calculated using the Soil Conservation Service WSP-2 water-surface profiles computer program (Reference 11). This program uses the standard step method, with some modifications, to compute profiles between valley sections. All profiles are computed in the upstream direction. Therefore, only subcritical flow, a condition normally characteristic of natural streams, can be analyzed. For any supercritical flows encountered, the program will assume critical depth and resume computations.

For starting profile computations on Great Valley Creek, tailwater elevations on the Allegheny River, as determined in the Flood Insurance Study for the City of Salamanca (Reference 12) were used. In a like manner, computed elevations on Great Valley Creek were used as starting elevations for Wrights Creek.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 3).

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All elevations are referenced to the NGVD. Elevation reference
marks used in the study are shown on the maps.

For the reaches of Wrights Creek and Forks Creek studied by approxi-
mate methods, USGS Flood Height-Drainage Area Curves for the 100-
year flood (Reference 13) were utilized. Drainage areas were devel-
oped at selected locations from USGS 7.5 Minute series topographic
maps (Reference 14). 100-year flood heights were then extracted
from the curves and using USGS 7.5 Minute topographic maps for dif-
ferential elevation reference, approximate 100-year inundation
limits were plotted on New York State Department of Transportation
7.5 Minute planimetric series maps. Estimates of discharges and
slopes and a field view of each stream were also employed to verify
the delineation.

The flood elevations as shown on the profiles are considered valid
only if hydraulic structures in general remain unobstructed and dams
and other flood control structures described above operate properly
and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

A prime purpose of the National Flood Insurance Program is to encourage
state and local governments to adopt sound flood plain management pro-
grams. This Flood Insurance Study, therefore, includes a flood boundary
map designed to assist communities in developing sound flood plain man-
agement measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimi-
nation, the 100-year flood has been adopted by the FIA as the base
flood for purposes of flood plain management measures. The 500-year
flood is employed to indicate additional areas of flood risk in the
community. For each stream studied in detail, the boundaries of the
100-year and the 500-year floods have been delineated using the
flood elevations determined at each cross section; between cross
sections, the boundaries were interpolated using topographic maps
developed for this study at a scale of 1"=400' with a contour inter-
val of five feet (Reference 15). In cases where the 100-year and
the 500-year flood boundaries are close together, only the 100-year
boundary has been shown.

Approximate 100-year flood boundaries for Plum Brook, Porter Creek,
Barker Run and Willoughby Creek and several unnamed streams delin-
eated on a previously published FIA flood map are presented unchanged
in this Flood Insurance Study (Reference 16).

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The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 3). Small areas within the flood boundaries may lie above the flood elevations and therefore, not be subject to flooding; owing to limitations of the map scale, and lack of detailed topographic data, such areas are not shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases flood heights of streams and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights. Minimum standards of the FIA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plain. The floodways presented for Great Valley Creek and Wrights Creek were computed using the "HUD-15" Computer Program (Reference 17). Where special topographic features required it, the floodway was adjusted more toward one side of the stream as necessary. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 3), the floodway boundaries were determined at cross sections; between cross sections the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 4.

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION		
CROSS SECTION	DISTANCE	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	WITH FLOODWAY (NGVD)	WITHOUT FLOODWAY (NGVD)	DIFFERENCE (FT.)
Great Valley Creek							
A	870[1]	637	5,746	2.23	1392.5	1391.5	1.0
B	5,770[1]	285	3,020	4.22	1400.0	1399.0	1.0
C	11,860[1]	469	3,079	4.12	1416.4	1415.4	1.0
D	16,120[1]	213	2,499	4.95	1429.1	1428.1	1.0
E	20,210[1]	889	4,281	2.86	1434.7	1433.7	1.0
F	27,790[1]	425	2,593	3.16	1448.5	1447.5	1.0
G	35,530[1]	274	2,125	3.72	1464.8	1463.8	1.0
H	40,910[1]	172	912	5.48	1477.9	1476.9	1.0
I	45,735[1]	394	1,634	3.06	1490.9	1489.9	1.0
J	53,210[1]	111	800	5.38	1511.7	1510.7	1.0
Wrights Creek							
A	2,400[2]	172	1,020	4.61	1448.8	1447.8	1.0
B	4,325[2]	270	1,007	4.67	1458.5	1457.5	1.0
C	6,365[2]	115	688	6.83	1470.5	1469.5	1.0
D	9,575[2]	199	1,014	3.99	1482.0	1481.0	1.0
E	14,085[2]	108	730	5.55	1494.4	1493.4	1.0

[1] FEET ABOVE CORPORATE LIMITS
[2] FEET ABOVE MOUTH

TOWN OF GREAT VALLEY, NY
(CATTARAUGUS CO.)

FLOODWAY DATA

GREAT VALLEY CREEK AND WRIGHTS CREEK

TABLE 2
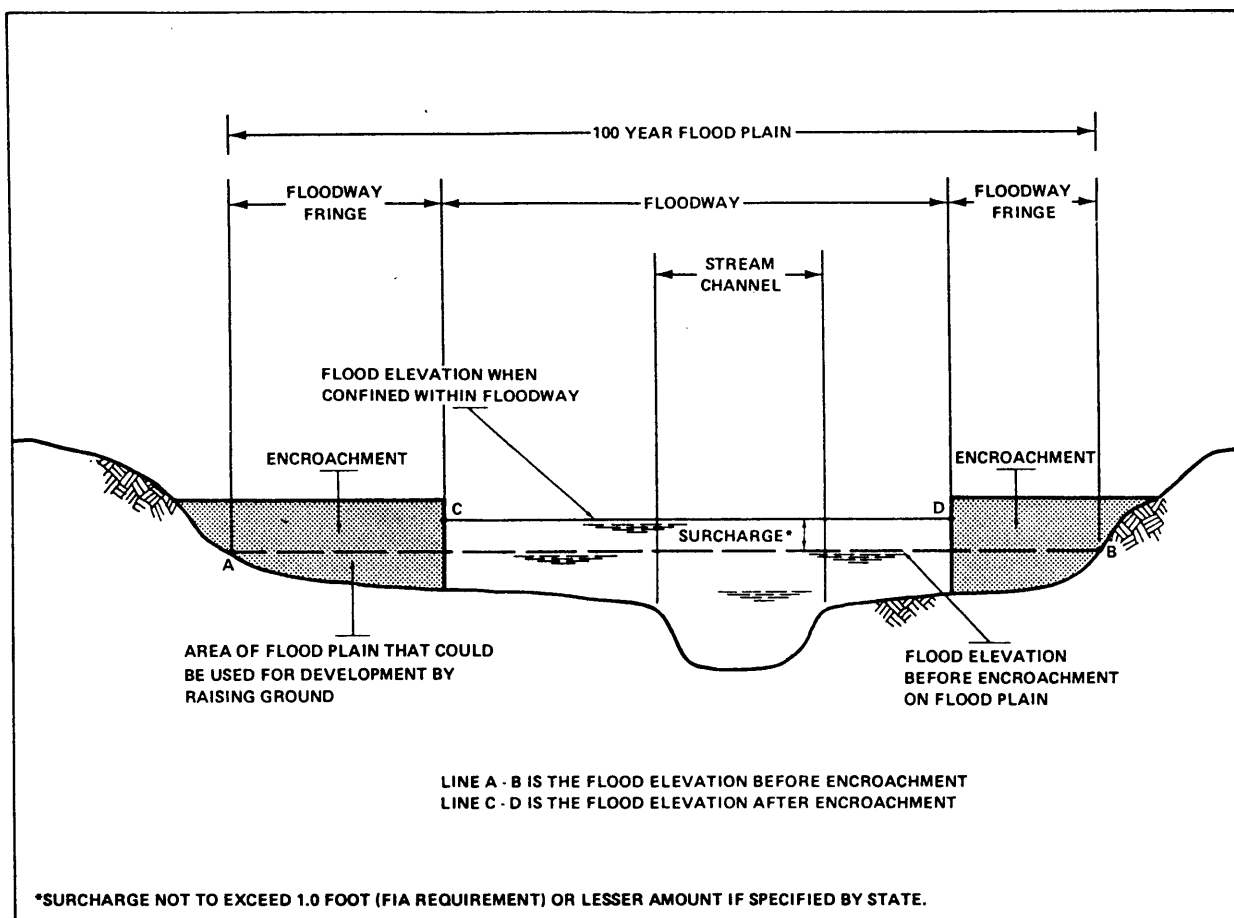
FLOODWAY SCHEMATIC   Figure 4

The schematic labels (reproduced as text):

100 YEAR FLOOD PLAIN

FLOODWAY FRINGE — FLOODWAY — FLOODWAY FRINGE

STREAM CHANNEL

FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY

ENCROACHMENT   ENCROACHMENT

C   D

SURCHARGE*

A   B

AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND

FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN

LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT

*SURCHARGE NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FIA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the Town of Great Valley.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations of the 10- and 100-year floods. For

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this study, this difference does not have a variation greater than
that indicated in the following table for more than 20 percent of
the reach.

Average Difference Between
10- and 100-year Floods   Variation

2 to 7 feet   1.0 foot

Two reaches meeting the above criterion were required for the flood-
ing sources of Great Valley. These included one on Great Valley
Creek and one on Wrights Creek. The locations of the reaches are
shown on the Flood Profiles (Exhibit 1).

5.2 Flood Hazard Factors

The FHF is the FIA device used to correlate flood information with
insurance rate tables. Correlations between property damages from
floods and FHFs are used to set actuarial insurance premium rate
tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the
10- and 100-year flood water-surface elevations expressed to the
nearest one-half foot, and shown as a three-digit code. For ex-
ample, if the difference of water-surface elevations between the
10- and 100-year floods is 0.7 foot, the FHF is 005; if the dif-
ference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet,
the FHF is 050. When the difference between the 10- and 100-year
water-surface elevations is greater than 10.0 feet, accuracy for
the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the
entire area of Great Valley was divided into zones, each having
a specific flood potential or hazard. Each zone was assigned one
of the following flood insurance zone designations:

Zone A: Special Flood Hazard Areas inundated by
the 100-year flood, determined by approx-
imate methods; no base flood elevations
shown or FHFs determined.

Zone A5:   Special Flood Hazard Areas inundated by
the 100-year flood, determined by detailed
methods; base flood elevations shown, and
zones subdivided according to FHFs.

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Zone B: Areas between the Special Flood Hazard
                               Areas and the limits of the 500-year flood,
                               including areas of the 500-year flood plain
                               that are protected from the 100-year flood
                               by dike, levee, or other water control struc-
                               ture; or, areas subject to certain types of
                               100-year shallow flooding where depths are
                               less than 1.0 foot. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation
differences, FHFs, flood insurance zones, and base flood elevations
for each flooding source studied in detail in the Town of Great
Valley.

5.4   Flood Insurance Rate Map Description

      The Flood Insurance Rate Map for the Town of Great Valley is, for
      insurance purposes, the principal result of the Flood Insurance
      Study. This map (published separately) contains the official
      delineation of flood insurance zones and base flood elevation lines.
      Base flood elevation lines show the locations of the expected whole-
      foot water-surface elevations of the base (100-year) flood. This
      map is developed in accordance with the latest flood insurance map
      preparation guidelines published by the FIA.

6.0   OTHER STUDIES

      No other studies of flooding have been performed for the Town of Great
      Valley. A COE Flood Plain Information Report (Reference 18) for the
      contiguous City of Salamanca includes some general information on his-
      torical flooding in the lower reaches of Great Valley Creek which was
      utilized in the development of this study.

      Flood Insurance Studies are currently underway by the New York State De-
      partment of Environmental Conservation for other communities within the
      Allegheny River Basin, including the Village and Town of Ellicottville
      and the City and Town of Salamanca. The information presented in this
      study was coordinated with that prepared for contiguous communities
      to assure compatability of study results.

      This study is authoritative for purposes of the Flood Insurance Pro-
      gram and the data presented here either supersede or are compatible with
      previous determinations.

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3]
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Great Valley Creek Reach 1	15,20,25	-2.67	-0.58	+1.15	025	A5	Varies
Wrights Creek Reach 1	25	-2.25	-0.39	+0.67	025	A5	Varies

[1] FLOOD INSURANCE RATE MAP PANEL
[2] WEIGHTED AVERAGE
[3] ROUNDED TO NEAREST FOOT – SEE MAP

TOWN OF GREAT VALLEY, NY
(CATTARAUGUS CO.)

FLOOD INSURANCE ZONE DATA

**GREAT VALLEY CREEK AND WRIGHTS CREEK**

**TABLE 3**

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Federal Insurance Administration, Regional Director, 26 Federal Plaza, New York, New York 10007.

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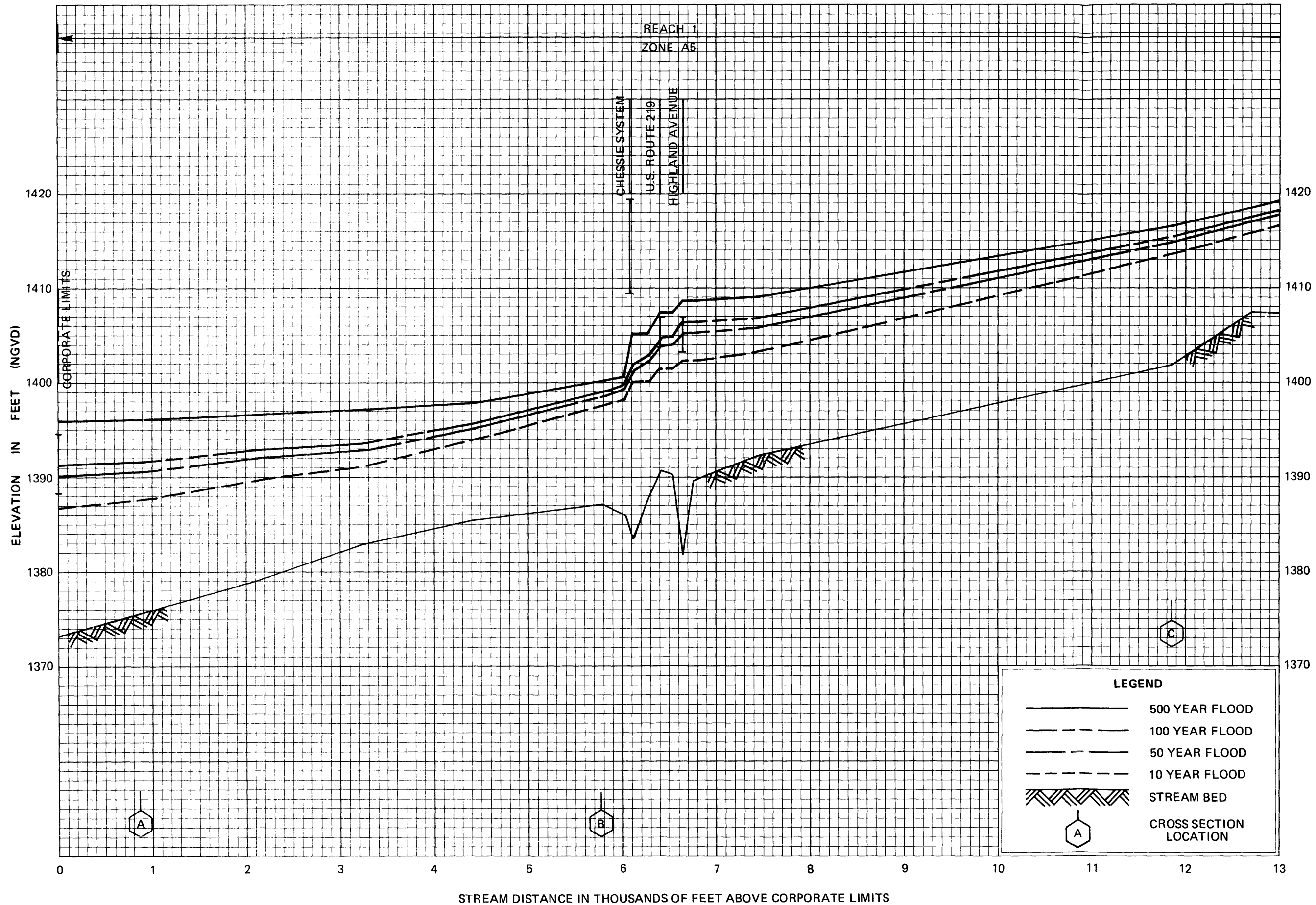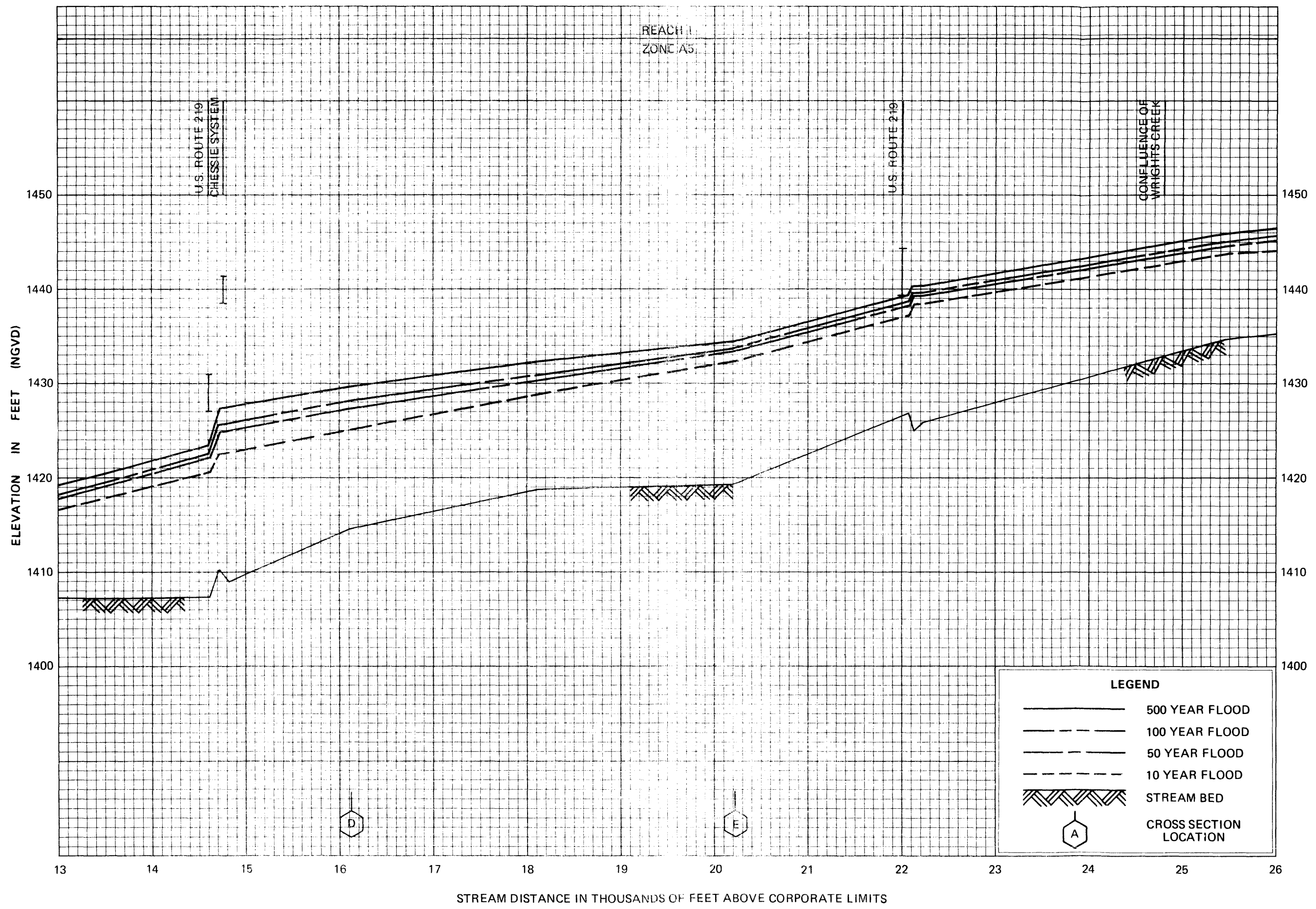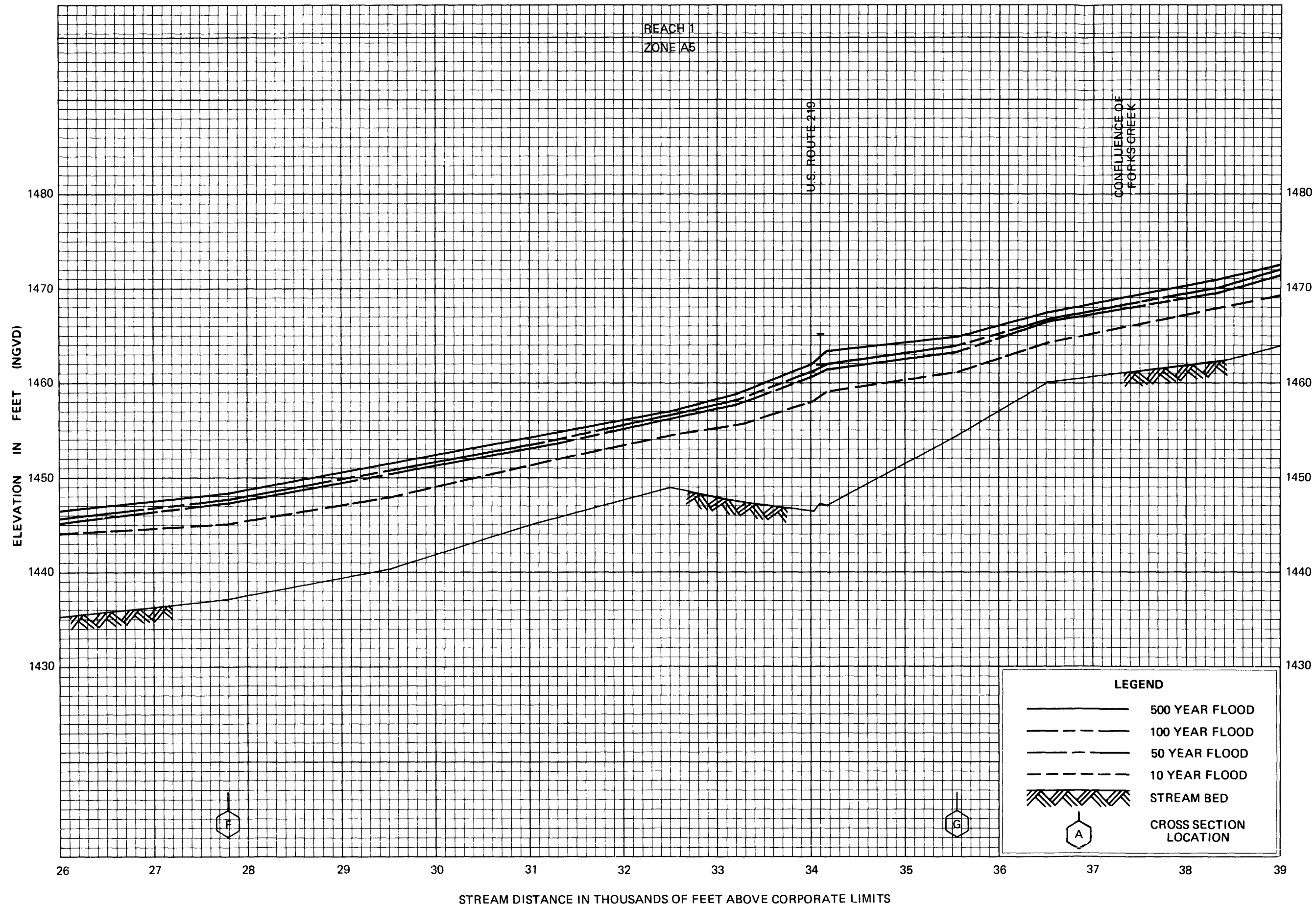
FLOOD PROFILES

GREAT VALLEY CREEK

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWN OF GREAT VALLEY, NY

(CATTARAUGUS CO.)

01P

FLOOD PROFILES

GREAT VALLEY CREEK

TOWN OF GREAT VALLEY, NY

(CATTARAUGUS CO.)

02P

LEGEND

———————— 500 YEAR FLOOD

– – – – – 100 YEAR FLOOD

— — — 50 YEAR FLOOD

- - - - - 10 YEAR FLOOD

STREAM BED

CROSS SECTION LOCATION

ELEVATION IN FEET (NGVD)

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CORPORATE LIMITS

REACH I
ZONE A5

U.S. ROUTE 219
CHESSIE SYSTEM

U.S. ROUTE 219

CONFLUENCE OF WRIGHTS CREEK

FLOOD PROFILES

GREAT VALLEY CREEK

REACH 1

ZONE A5

U.S. ROUTE 219

CONFLUENCE OF FORKS CREEK

ELEVATION IN FEET (NGVD)

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CORPORATE LIMITS

LEGEND

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED

CROSS SECTION
LOCATION

TOWN OF GREAT VALLEY, NY

(CATTARAUGUS CO.)

03P

REACH 1

ZONE A5

BREWER ROAD

GREAT VALLEY CREEK

ELEVATION IN FEET (NGVD)

1510

1500

1490

1480

1470

1460

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CORPORATE LIMITS

39 40 41 42 43 44 45 46 47 48 49 50 51 52

LEGEND

_____ 500 YEAR FLOOD

– – – – – – – – – 100 YEAR FLOOD

— — — — — 50 YEAR FLOOD

- - - - - - - - 10 YEAR FLOOD

WWWWWWW STREAM BED

(A) CROSS SECTION
LOCATION

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

TOWN OF GREAT VALLEY, NY

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04P

REACH 1
ZONE A5
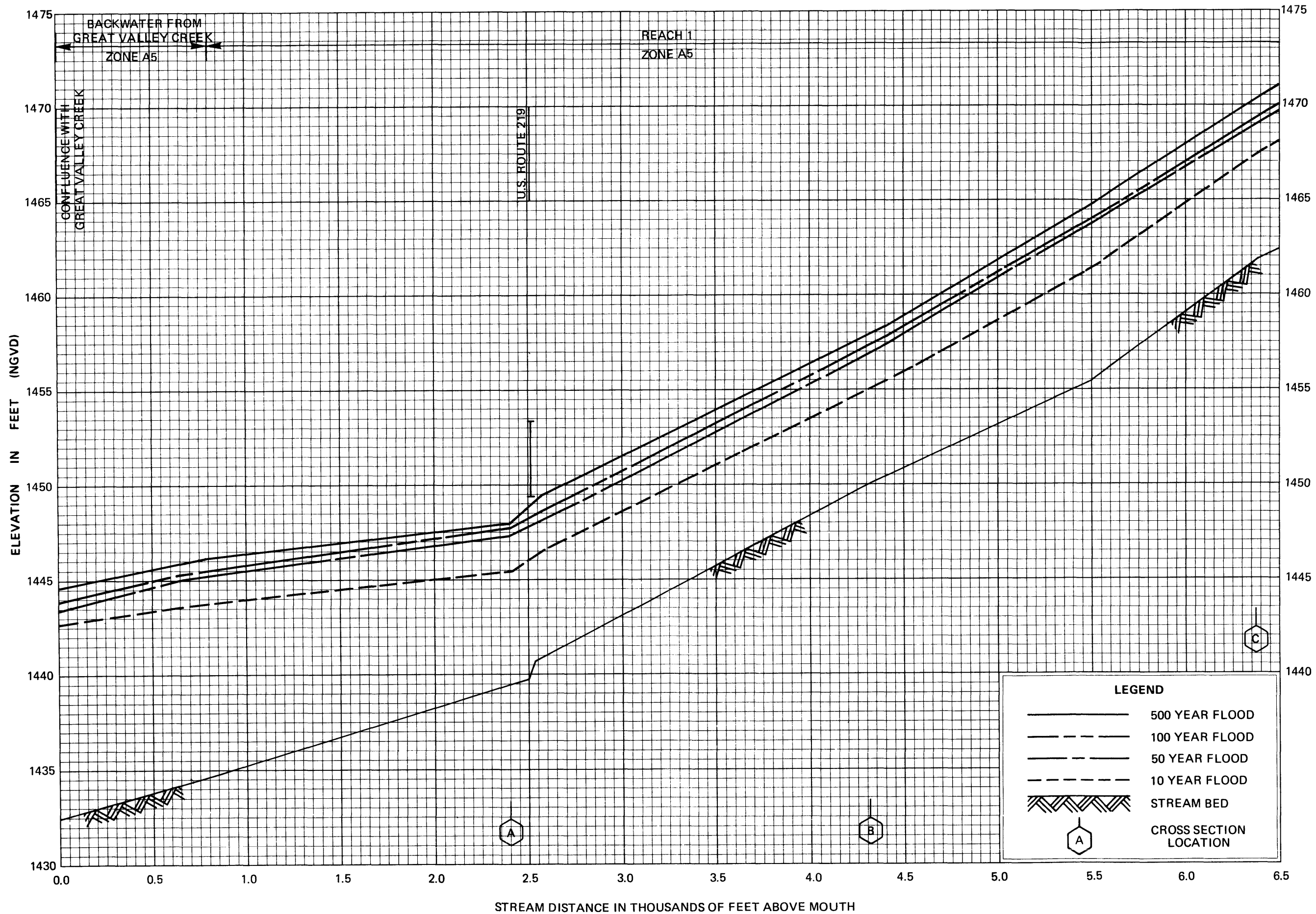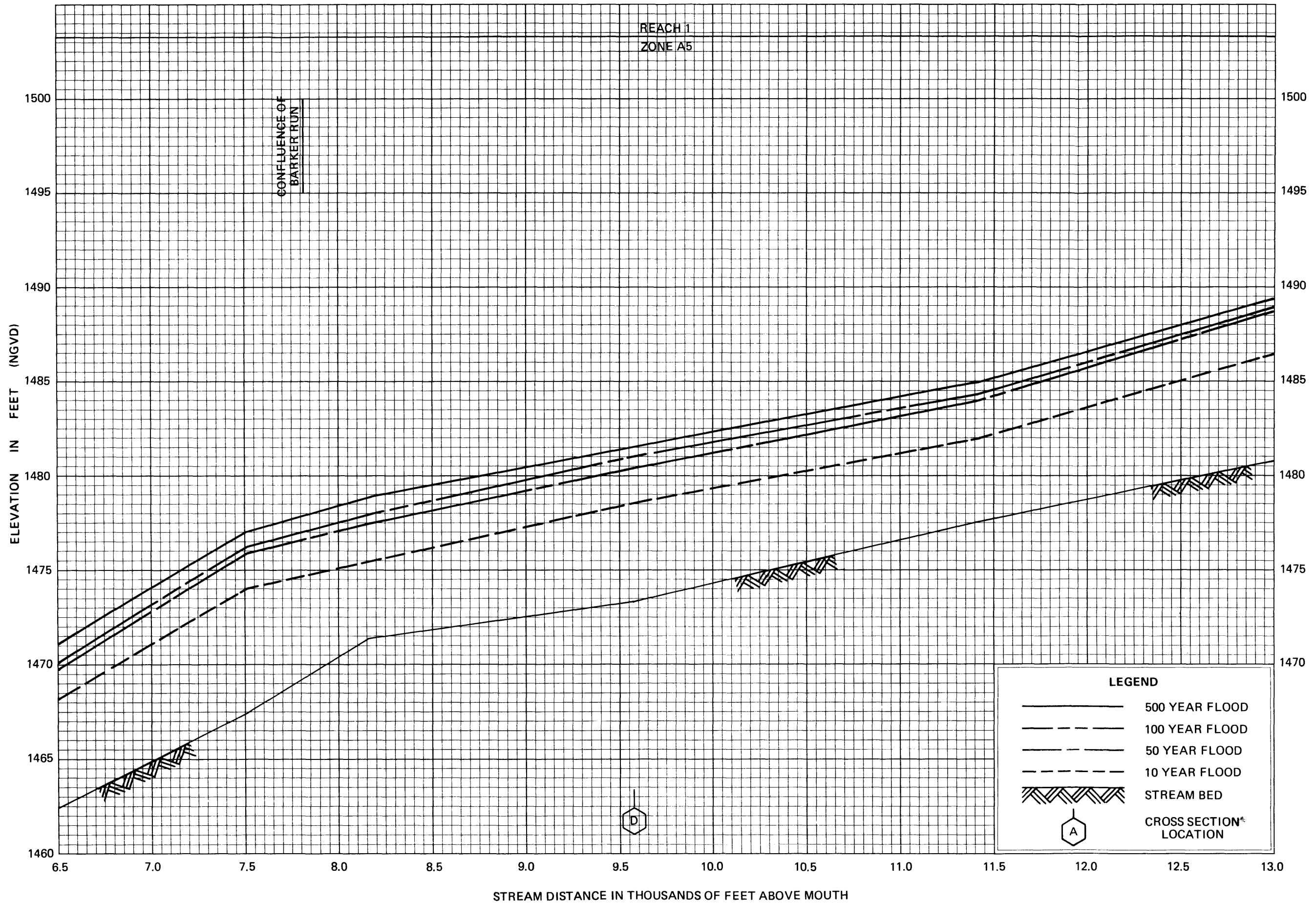
CORPORATE LIMITS

ELEVATION IN FEET (NGVD)

1520
1510
1500
1490
1480
1470

52   53   54

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CORPORATE LIMITS

TOWN OF GREAT VALLEY, NY

(CATTARAUGUS CO.)

LEGEND

——————— 500 YEAR FLOOD
— — — — 100 YEAR FLOOD
— — — 50 YEAR FLOOD
— — — — — 10 YEAR FLOOD
XXXXXX STREAM BED
(A) CROSS SECTION LOCATION

FLOOD PROFILES

GREAT VALLEY CREEK

05P

FLOOD PROFILES

WRIGHTS CREEK

TOWN OF GREAT VALLEY, NY

(CATTARAUGUS CO.)

06P

FLOOD PROFILES

WRIGHTS CREEK

REACH 1
ZONE A5

CONFLUENCE OF BARKER RUN

ELEVATION IN FEET (NGVD)

STREAM DISTANCE IN THOUSANDS OF FEET ABOVE MOUTH

LEGEND

— 500 YEAR FLOOD
— — — 100 YEAR FLOOD
— — 50 YEAR FLOOD
— — — 10 YEAR FLOOD
STREAM BED
Ⓐ CROSS SECTION LOCATION
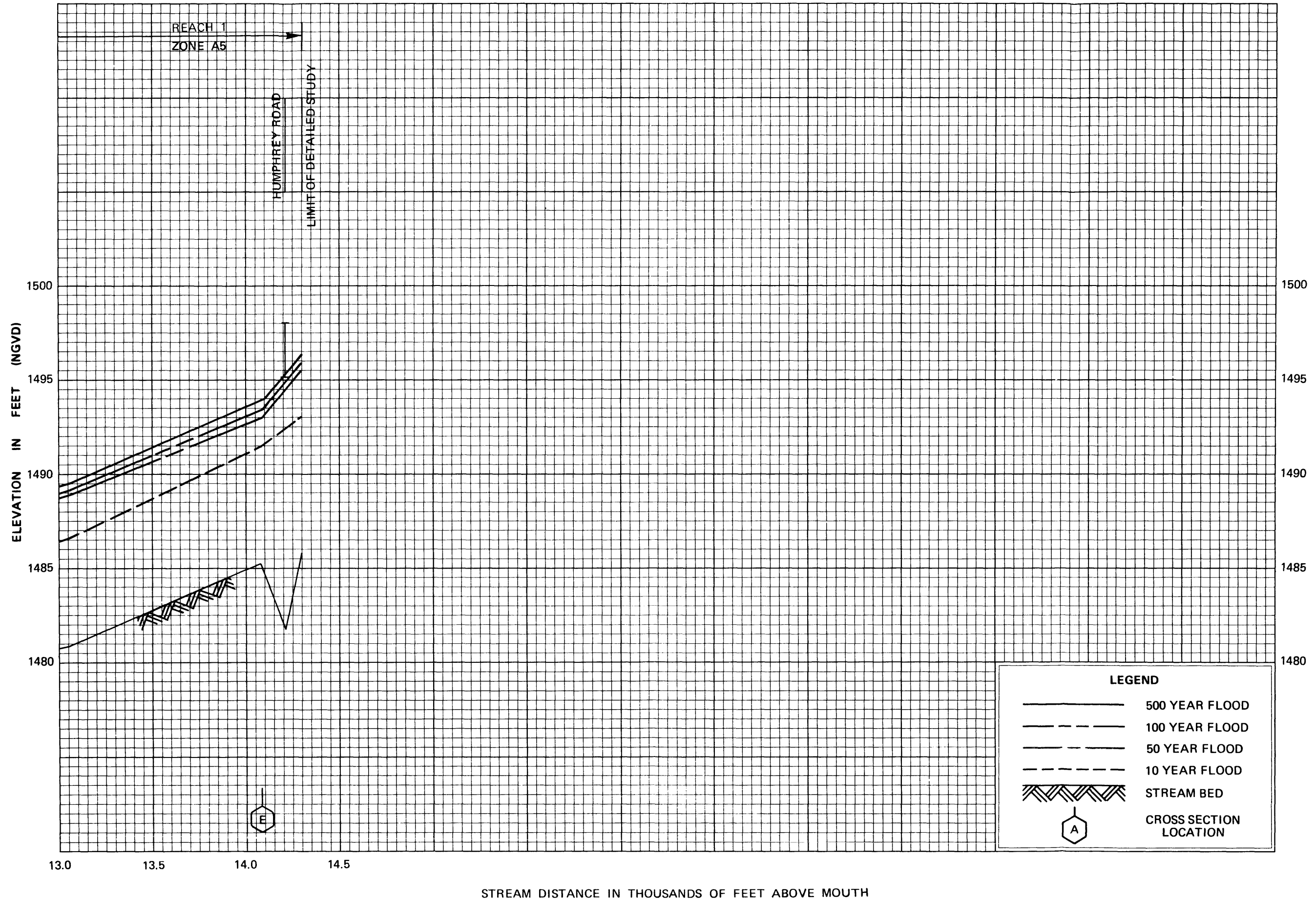
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

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(CATTARAUGUS CO.)

07P

FLOOD PROFILES

WRIGHTS CREEK

TOWN OF GREAT VALLEY, NY

(CATTARAUGUS CO.)

08P